WELDING PROCEDURE SPECIFICATION

WPS- 3501-1/11B **REV. NO.:** 0 **DATE:** 9/1/2004 ****APPLICABILITY****

WELDING PROCESS/ES GMAW-F **and** GMAW-F **ASME:** X **AWS:** X

SUPPORTING PQ 351-1 AWS 351-11B Z-WS-10D-F **OTHER:**

Z-WS-10D P-WS-160-1 Z-WS-8D-F Z-WS-8B-H

JOINT **This WPS shall be used in conjunction with the General Welding Standards (GWS) and Welding Fabrication Procedure (WFP) sections and criteria for joint details, repairs, NDE, inspection etc.**

Weld Joint Type Butt/Fillet **Class:** Full or Partial Penetration

See GWS 1-06 for details **Preparation:** Thermal P1/Mechanical P11

Root Opening: **Backing:** Metal

Backgrind root: N **Backing Mat.:**

Bkgrd Method: **GTAW Flux:** **Backing Retainer:**

FILLER METALS: **Class:** E7XT-X **and** E7XT-X

A No: 1 **SFA Class:** 5.20 **and** 5.20 **F No:** 6 **and** 6 **Size:** 3/64 3/64 1/16 1/16

Insert: N **Insert Desc.:** N/A **Weld Metal Thickness Range:**

Flux: Type: N/A **Size:** 0 **AWS:** 0.120 **thru** 99.999

Filler Metal Note: **ASME:** 0.062 **thru** 2.000

BASE MATERIAL **P No.** 1 **Gr No.** I **to: P No.** 11 **Gr No.** V

Spec. ASTM A-36 **Grade:** N/A **to: Spec.** ASTM A-517 **Grade:** Q

Pipe Dia Range: **Groove >** 0

Thickness Range: Groove : **AWS:** 0.120 **thru** 99.999 **ASME:** 0.062 **thru** 2.000

QUALIFIED POSITIONS 1G2G3G **Vertical Progression:** Up

Preheat Min. Temp.: 50 **F** **GAS: Shielding:** CO2 **or**

Interpass Max. Temp. 400 **F** **Gas Composition:** 100 **%** **%** **%**

Preheat Maintinance: 50 **F** **Gas Flow Rate cfh** 25 **to** 50

Backing Gas/Comp: **%**

PWHT: Time @ F Temp. 0 **Backing Gas Flow cfh** 0 **to** 0

Temp. Range: 0 **F** **to** 0 **F** **Trailing Gas/Comp:** **%**

PREPARED BY Kelly Bingham **DATE:** 3/30/2004

Signature on file at FWO-DECS

APPROVED BY Tobin Oruch **DATE:** 9/1/2004

Signature on file at FWO-DECS

Note:For SC/SS/ML-1/ML-2 work, this WPS requires independent review.

WELDING CHARACTERISTICS:

Current: DCEP **and** DCEP **Tungsten type:** N/A **Transfer Mode:** Globular

Ranges: Amps 130 **to** 300 **Pulsing Cycle:** 0 **to** 0

Volts 20 **to** 30 **Background Current:** 0

Fuel Gas: N/A **Flame:** N/A **Braze temp. F** 0 **to** 0

WELDING TECHNIQUE: **For cleaning, grinding, and inspection criteria refer to Volume 2, Welding Fabrication Procedures**

Technique: Manual **Cleaning Method:**

Single Pass of Multi Pass: M **Stringer or Weave bead (S/W):** S **Oscillation:** N

GMAW Gun Angle °: 5 **to** 15 **Forehand or Backhand for GMAW (F/B):** B

Maximum K/J Heat Input **Travel speed/ipm:** 7 - 18 **Gas Cup Size:**

PROCEDURE QUALIFIED FOR:

Charpy "V" Notch: N **Nil-Ductil Transition Temperature:** N **Dynamic Tear:** N

Comments:

Weld Layer	Manual Process	Filler Metals	Size	Amp Range		Volt Range		Travel ipm		Nozzel Angle	Other
1	GMAW-FC	E7XT-X	3/64	130	225	20	24	7	12	5	
2	GMAW-FC	E7XT-X	3/64	225	300	26	30	10	18	15	
3			1/16								
4			1/16								
5											
6											
7											
8											

REM. * Weld layers are representative only - actual number of passes and layer sequence may vary due to variations in joint design, thickness and fitup.